



~~10/231-953~~
10/231-986
CJCA

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Post Office as first class mail in an envelope addressed to: Commissioner for Patents, Office of Patent Publication Attention: Certificate of Correction Branch, P.O. Box 1450, Alexandria, VA 22313-1450 on

Date: May 3, 2006

Name: Gregg S. Ayoub

Signature:

Gregg S. Ayoub

Docket No. 21100.0094

Customer No. 41913

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: David Hawley

Patent No: 7,030,336 B1

Issue Date: April 18, 2006

For: METHOD OF FIXING ANODIC ARC ATTACHMENT OF A
MULTIPLE ARC PLASMA GUN AND NOZZLE DEVICE FOR THE
SAME

Commissioner for Patents
Office of Patent Publication Attention: Certificate of Correction Branch
P.O. Box 1450
Alexandria, VA 22313-1450

Certificate
MAY 10 2006
of Correction

REQUEST FOR CERTIFICATE OF CORRECTION UNDER 37 CFR §1.322
AND REQUEST FOR EXPEDITED PROCESSING OF PETITION

Sir:

In accordance with the provisions of 37 CFR §1.322 which implement 35 USC §254, the United States Patent and Trademark Office is respectfully requested to issue a Certificate of Correction in the above-identified patent to correct material errors in the printed patent document. Expedited processing of this Petition is also requested and the payment of the appropriate fee therefore is authorized below.

05/09/2006 BABRAHA1 00000051 503024 7030336

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MAY 10 2006

MAY 10 2006

Request for Expedited Certificate of Correction
U.S. Patent No. 7,030,336 B1

Errors Corrected

The errors are explained below with reference to their occurrence in the application and correspond to the changes listed on the attached Form PTO-1050.

Firstly, according to the Updated Filing Receipt mailed May 19, 2004, the Official Application No. of this patent is 10/731,986. Secondly and thirdly, the Amendment After Final that was filed on September 30, 2005 clearly reads in the fifth and sixth lines of the first claim, "an anode element positioned at a second end of the plasma channel, the anode element having a central bore therein ..." In addition, this particular language is the same exact language found in the application as filed on December 11, 2003, and has not been changed since then.

The United States Patent and Trademark Office evidently erred when these errors were made in the formal patent document for the reasons stated above. Included within this submission are copies of the aforesaid Updated Filing Receipt, Amendment After Final, and the first page of the Amendment After Final (taken from the USPTO's PAIR database), indicating entry approval and date of receipt.

Since these mistakes are not obvious from the printed text, it is believed to be in order for the United States Patent and Trademark Office to issue a Certificate of Correction in accordance with the two copies of the one sheet of enclosed Form PTO/SB/44 (PTO-1050) and to place such a Certificate of Correction in the file so that such will appear on any copies of the patent which are ordered in the future. Moreover, since these mistakes were that of the United States Patent and Trademark Office, such should be done without charge to the patentee.

2005
2005

Request for Expedited Certificate of Correction
U.S. Patent No. 7,030,336 B1

It is respectfully requested that when the above-requested Certificate of Correction has been issued and entered in the file, that a certified copy of the Certificate of Correction be duly returned to the below-listed attorney for the patentee.

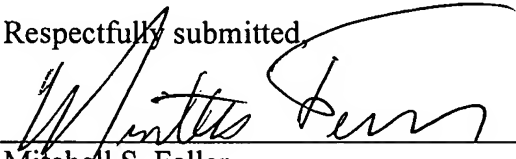
Expedited Processing

The Commissioner is authorized to charge the \$130.00 petition fee for expedited processing of this Petition to Deposit Account No. **50-3024**. Please charge any insufficiency of fees or credit any overpayment to Deposit Account No. **50-3024**. Although Applicant believes the error occurred at the U.S. Patent and Trademark Office, should the mistake be found to be that of the patentee, the Commissioner is hereby authorized to charge any fees to Deposit Account No. **50-3024**.

Prompt grant of this Petition is respectfully requested.

Date: May 3, 2006

Respectfully submitted,



Mitchell S. Feller
Reg. No. 42,530

Hogan & Hartson L.L.P.
875 Third Avenue
New York, NY 10022
Telephone: (212) 918-3000

**UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION**Page 1 of 1

PATENT NO. : 7,030,336 B1

APPLICATION NO.: 10/731,986

ISSUE DATE : April 18, 2006

INVENTOR(S) : David Hawley

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Title Page, (21): "10/731,9864" should read --10/731,986--.

Column 6, line 15: "circuit" should read --element--.

Column 6, line 16: "herein" should read --therein--.

MAILING ADDRESS OF SENDER (Please do not use customer number below):

Mitchell S. Feller, Hogan & Hartson L.L.P., 875 Third Avenue, New York, NY 10022

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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MAY 10 2006

UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 1 of 1

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Docket No. 21100.0094

Customer No. 41913

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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SEP 30 2005

In re Application of: David Hawley

Filed: December 10, 2003

Group Art Unit: 3742

Serial No: 10/731,986

Examiner: Mark H. Paschall

For: METHOD OF FIXING ANODIC ARC ATTACHMENT OF MULTIPLE
ARC PLASMA GUN AND NOZZLE DEVICE FOR SAME

AMENDMENT AFTER FINAL

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Only approved mm
In response to the Office Action dated April 7, 2005, please amend the above identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper. Remarks/Arguments begin on page 18 of this paper.

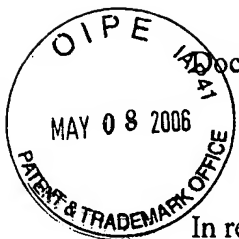
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PAGE 7/20 * RCVD AT 9:30/2005 4:27:50 PM (Eastern Daylight Time) * SVR:USPTO-EFXXF-6/35 * DNS:2738300 * CSID:2129183100 * DURATION (mm:ss):04:36

MAY 10 2006



Docket No. 21100.0094

Customer No. 41913

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: David Hawley

Filed: December 10, 2003

Group Art Unit: 3742

Serial No: 10/731,986

Examiner: Mark H. Paschall

For: METHOD OF FIXING ANODIC ARC ATTACHMENT OF MULTIPLE
ARC PLASMA GUN AND NOZZLE DEVICE FOR SAME

AMENDMENT AFTER FINAL

Mail Stop AF

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

In response to the Office Action dated April 7, 2005, please amend the above identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper. **Remarks/Arguments** begin on page 13 of this paper.

MAY 10 2006

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A plasma generator having a plasma channel therein extending along a central axis and comprising:

a plurality of cathodes positioned at a first end of the plasma channel and arranged radially about the axis;

an anode element positioned at a second end of the plasma channel, the anode element having a central bore therein and a plurality of arc attachment regions along a surface of the central bore, each attachment region corresponding to a respective cathode and configured to provide a substantially radially predefined attachment point for an electrical arc extending between the attachment region and the respective cathode, wherein each arc attachment region comprises a respective discrete elevation of the surface of the central bore towards the central axis.

2. (Original) The plasma generator of claim 1, further comprising at least one gas inlet near the first end of the plasma channel through which gas can be injected into the channel.

3. (Canceled)

4. (Previously Presented) A plasma generator having a plasma channel therein extending along a central axis and comprising:

a plurality of cathodes positioned at a first end of the plasma channel and arranged radially about the axis;

an anode element positioned at a second end of the plasma channel, the anode element having a central bore therein and a plurality of arc attachment regions along a surface of the central bore, each attachment region corresponding to a respective cathode and configured to provide a substantially radially predefined attachment point for an electrical arc extending between the attachment region and the respective cathode;

wherein each arc attachment region comprises an elevation of the surface of the central bore towards the central axis; and

wherein each elevation comprises a ridge having an upper surface relative to the central axis and at an angle thereto.

5. (Previously Presented) A plasma generator having a plasma channel therein extending along a central axis and comprising:

a plurality of cathodes positioned at a first end of the plasma channel and arranged radially about the axis;

an anode element positioned at a second end of the plasma channel, the anode element having a central bore therein and a plurality of arc attachment regions along a surface of the central bore, each attachment region corresponding to a respective cathode and configured to provide a substantially radially predefined attachment point for an electrical arc extending between the attachment region and the respective cathode;

wherein each arc attachment region comprises an elevation of the surface of the central bore towards the central axis; and

wherein a contour of the central bore along a cross-section perpendicular to the central axis corresponds to an outer edge of a plurality of overlapping generally circular bodies arranged around the central axis.

6. (original) The plasma generator of claim 5, wherein the circular bodies are arranged symmetrically around the central axis and have substantially equal diameters.

7. (Currently Amended) The plasma generator of claim 1 ~~[[3]]~~, wherein the surface of the central bore comprises tungsten.

8. (original) The plasma generator of claim 7, wherein the central bore is defined by a tungsten sleeve contained within the anode element.

9. (original) The plasma generator of claim 1, wherein the anode element is substantially comprised of a first electrically conductive material having a first thermal conductivity and the arc attachment regions comprise a second electrically conductive material having a second thermal conductivity less than the first thermal conductivity.

10. (original) The plasma generator of claim 9, wherein the first electrically conductive material comprises copper and the second electrically conductive material comprises tungsten.

11. (previously presented) A plasma generator having a plasma channel therein extending along a central axis and comprising:

a plurality of cathodes positioned at a first end of the plasma channel and arranged radially about the axis;

an anode element positioned at a second end of the plasma channel, the anode element having a central bore therein and a plurality of arc attachment regions along a surface of the central bore, each attachment region corresponding to a respective cathode and configured to provide a substantially radially predefined attachment point for an electrical arc extending between the attachment region and the respective cathode;

wherein the anode element is substantially comprised of a first electrically conductive material having a first thermal conductivity and the arc attachment regions comprise a second electrically conductive material having a second thermal conductivity less than the first thermal conductivity; and

wherein the arc attachment regions comprise axially elongated members mounted in the anode element.

12. (original) The plasma generator of claim 11, wherein at least a portion of each member is exposed along the surface of the central bore, the exposed portions forming the arc attachment regions.

13. (original) The plasma generator of claim 12, wherein the exposed portions are proud relative to adjacent areas of the surface of the central bore.

14. (original) The plasma generator of claim 13, wherein the anode element is substantially comprised of copper and the members substantially comprise tungsten pins inserted into corresponding openings in the anode element.

15. (currently amended) ~~The plasma generator of claim 1~~ A plasma generator having a plasma channel therein extending along a central axis and comprising:
a plurality of cathodes positioned at a first end of the plasma channel and arranged radially about the axis;
an anode element positioned at a second end of the plasma channel, the anode element having a central bore therein and a plurality of arc attachment regions along a surface of the central bore, each attachment region corresponding to a respective cathode and configured to provide a substantially radially predefined attachment point for an electrical arc extending between the attachment region and the respective cathode, wherein the anode element has having a plurality of cooling channels therein, the cooling channels configured to allow a coolant to remove heat from the arc attachment regions being defined by differences in the capacity of the cooling channels to remove heat from regions of the anode element adjacent the central bore, wherein the cooling channels are configured to remove heat from the arc attachment regions at a first rate and to remove heat from regions adjacent the arc attachment regions and the central bore at a second rate greater than the first rate;
wherein the arc attachment regions will be cooled more slowly than the adjacent regions.

16. (original) The plasma generator of claim 1, further comprising a plurality of powder injection ports arranged in a substantially fixed configuration with relation to the arc attachment regions.

17. (original) The plasma generator of claim 16, wherein the anode element and at least part of the powder injection ports comprise an integral member.

18. (currently amended) An anode element for use in a plasma generator having a plurality of cathodes comprising;

an electrically conductive body having a central bore therein defining a central axis and a plurality of arc attachment regions arranged along a surface of the central bore, each attachment region providing a substantially radially predefined attachment point for an electrical arc extending between the attachment region and a respective cathode when the anode nozzle element is used in the plasma generator and sufficient current is applied across the anode element and the plurality of cathodes, wherein each arc attachment region comprises a respective discrete elevation of the surface of the central bore towards the central axis.

19. (cancelled)

20. (previously presented) An anode element for use in a plasma generator having a plurality of cathodes comprising;

an electrically conductive body having a central bore therein and a plurality of arc attachment regions arranged along a surface of the central bore, each attachment region

providing a substantially radially predefined attachment point for an electrical arc extending between the attachment region and a respective cathode when the anode nozzle element is used in the plasma generator and sufficient current is applied across the anode element and the plurality of cathodes;

wherein each arc attachment region comprises an elevation of the surface of the central bore towards the central axis; and

wherein each elevation comprises a ridge having an upper surface relative to the central axis and at an angle thereto.

21. (previously presented) An anode element for use in a plasma generator having a plurality of cathodes comprising;

an electrically conductive body having a central bore therein and a plurality of arc attachment regions arranged along a surface of the central bore, each attachment region providing a substantially radially predefined attachment point for an electrical arc extending between the attachment region and a respective cathode when the anode nozzle element is used in the plasma generator and sufficient current is applied across the anode element and the plurality of cathodes;

wherein each arc attachment region comprises an elevation of the surface of the central bore towards the central axis; and

wherein a contour of the central bore along a cross-section perpendicular to the central axis corresponds to an outer edge of a plurality of overlapping generally circular shapes arranged around the central axis.

22. (original) The anode element of claim 21, wherein the circular shapes are arranged symmetrically around the central axis and have substantially equal diameters.

23. (presently amended) The anode element of claim 18 ~~19~~, wherein the surface of the central bore comprises tungsten.

24. (original) The anode element of claim 23, wherein the central bore is defined by a tungsten sleeve contained within the body.

25. (original) The anode element of claim 18, wherein the body comprises a first electrically conductive material having a first thermal conductivity and wherein the arc attachment regions comprise a second electrically conductive material having a second thermal conductivity less than the first thermal conductivity.

26. (original) The anode element of claim 25, wherein the first electrically conductive material comprises copper and the second electrically conductive material comprises tungsten.

27. (previously presented) An anode element for use in a plasma generator having a plurality of cathodes comprising;

an electrically conductive body having a central bore therein and a plurality of arc attachment regions arranged along a surface of the central bore, each attachment region providing a substantially radially predefined attachment point for an electrical arc extending

between the attachment region and a respective cathode when the anode nozzle element is used in the plasma generator and sufficient current is applied across the anode element and the plurality of cathodes;

wherein the body comprises a first electrically conductive material having a first thermal conductivity and wherein the arc attachment regions comprise a second electrically conductive material having a second thermal conductivity less than the first thermal conductivity; and

wherein the arc attachment regions comprise axially elongated members mounted at least partially within the body.

28. (original) The anode element of claim 27, wherein at least a portion of each member is exposed along the surface of the central bore, the exposed portions forming the arc attachment regions.

29. (original) The anode element of claim 28, wherein the exposed portions are proud relative to adjacent areas of the surface of the central bore.

30. (original) The anode element of claim 29, wherein the body is substantially comprised of copper and the members substantially comprise tungsten pins inserted into corresponding openings in the body.

31. (original) The anode element of claim 18, further comprising a plurality of cooling channels therein, the cooling channels configured to allow a coolant to remove heat from

the arc attachment regions at a first rate and to remove heat from regions adjacent the arc attachment regions at a rate greater than the first rate;

wherein the arc attachment regions will be cooled more slowly than the adjacent regions.

32. (original) The anode element of claim 18, further comprising a plurality of powder injection ports arranged in a substantially fixed configuration with relation to the arc attachment regions.

33. (original) The anode element of claim 32, wherein the anode element comprises an integral member.

34. (Previously presented) The plasma generator of claim 1, wherein the arc attachment regions are within the central bore.

35. (Previously presented) The plasma generator of claim 1, wherein the arc attachment regions are linear.

36. (Previously presented) The plasma generator of claim 1, wherein the plurality of arcs pass through the central bore of the anode.

37. (Previously presented) The plasma generator of claim 18, wherein the arc attachment regions are within the central bore.

38. (Previously presented) The plasma generator of claim 18, wherein the arc attachment regions are linear.

MAY 10 2006

REMARKS / AMENDMENTS

In response to the Office Action dated April 7, 2005 and the Examiner Interview of September 29, 2005, claims 1, 7, 15, 18, and 23 have been amended and claims 3 and 19 have been canceled. Claims 1, 2, 4-18, and 20-38 are in the application. Reconsideration is respectfully requested.

The applicant's representative gratefully acknowledges the Examiner's consideration during the telephonic interview of September 29, 2005. In the interview, the Examiner confirmed the allowability of claims 4-6, 11-14, 20-22 and 27-30. The subject matter of claims 3 and 15 was also discussed during the interview and agreement was reached with respect to allowance of claims incorporating the subject matter recited in claims 3 and 15, clarified as discussed during the interview.

Claim 1 has been amended to include the subject matter of claim 3 and has been further amended to recite "respective discrete" elevations for each arch attachment area as discussed during the interview. Claim 3 has been canceled and claim 7, which depended from claim 3, has been amended to depend from claim 1. It is believed that claim 1 is now in condition for allowance. Claims 2, 7-10, 16-17, and 34-36 depend from claim 1 and are therefore likewise believed to be in condition for allowance.

Independent claim 18 and dependent claim 19 recited the same subject matter as claims 1 and 3, respectively, as it pertains to the anode element. Claim 18 has been amended to incorporate dependent claim 19 and in the same manner as claim 1, discussed above. Claim 19 has been canceled. Although claims 18 and 19 were not specifically discussed during the interview, in view of the Examiner's indication that claim 1, as amended herein, would be allowable, it is believed that claim 18, amended in the same manner, is also in condition for

allowance. Dependent claims 23 (as amended), 24-26, 31-33, and 37-38 depend from claim 18 and are therefore also believed to be in condition for allowance.

Claim 15 has been amended to be in independent form, including the subject matter of (unamended) claim 1. As discussed during the interview, claim 15 has been further amended to clarify the functionality of the cooling channels as it pertains to defining the position of the predefined arc attachment points in the anode. In particular, and as discussed during the interview, the arc attachment regions are "defined by differences in the capacity of the cooling channels to remove heat from regions of the anode element adjacent the central bore" so that the cooling capacity is less in areas where the arcs are intended to attach than in regions adjacent the predefined arc attachment points in the central bore.


In view of the discussion with the Examiner, it is believed that claim 15, as presently amended, is also in condition for allowance.

CONCLUSION

It is believed that all of the claims are now in condition for allowance and action to that end is respectfully requested. However, should the Examiner believe that further clarifying amendments to claims 1, 15, and 18 are necessary prior to allowance, the Examiner is invited to telephone the undersigned at the number below

Date: September 30, 2005

Respectfully submitted,


Mitchell S. Feller
Reg. No. 42,350

Hogan and Hartson, L.L.P.
875 Third Avenue
New York, New York 10022
Telephone: (212) 918-3000

2005 10 10



UNITED STATES PATENT AND TRADEMARK OFFICE

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| APPL NO. | FILING OR 371 (c) DATE | ART UNIT | FIL FEE PEC'D | ATTY. DOCKET NO | DRAWINGS | TOT CLMS | IND CLMS |
|------------|---------------------------|----------|---------------|----------------------|----------|----------|----------|
| 10/731,986 | 12/11/2003 | 3742 | 1134 | 21100.0094(7159-410) | 7 | 33 | 2 |

Mitchell S. Feller
 Hogan & Hartson, L.L.P.
 875 Third Avenue
 New York, NY 10022



CONFIRMATION NO. 5867

UPDATED FILING RECEIPT



OC000000012711548

Date Mailed: 05/19/2004

Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Filing Receipt Corrections, facsimile number 703-746-9195. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

Applicant(s)

David Hawley, Kings Park, NY;

Domestic Priority data as claimed by applicant

Foreign Applications

If Required, Foreign Filing License Granted: 03/16/2004

Projected Publication Date: Request for Non-Publication Acknowledged

Non-Publication Request: Yes

Early Publication Request: No

Title

Method of fixing anodic arc attachments of a multiple arc plasma gun and nozzle device for same

Preliminary Class

219

MAY 10 2006

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Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15**

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2005

UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 1 of 1

PATENT NO. : 7,030,336 B1

APPLICATION NO.: 10/731,986

ISSUE DATE : April 18, 2006

INVENTOR(S) : David Hawley

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